situated in the tissue of the stem, probably the soft bast. In most other cases it seems to be attached somehow to the reproductive parts of the plant. The quantity that can be extracted from Clematis is, however, much less than from the other plants spoken of.

The ferment has also been found in the petals of the artichoke (*Cynara Scolymus*).

An account of the occurrence of this vegetable rennet would not be complete without its including the researches of Dr. Sheridan Lea on *Withania coagulans* (Proceedings of the Royal Society, 1883). These have, besides their scientific value, a direct bearing upon the commercial aspect of the question. Many of the natives of India refuse to have anything to do with cheese prepared by means of animal rennet, and there is consequently there a large field for the employment of the plant. Some years ago Surgeon-Major Aitchison sent home an account of the peculiar property of the Withania. The shrub grows freely in Afghanistan and Northern India, and the natives there have for a long time employed an aqueous extract of the capsules to curdle their milk. Some dried material sent from thence to Kew was used by Dr. Lea in his investigations. Withania is a genus of the order Solanaceæ, and has a capsular fruit, containing a large number of small seeds. In the dried material these seeds were enveloped in a coating of a peculiar resinous matter, which was probably the dried juice of the capsules in which they had ripened. The ferment was found to exist to a very slight amount in the stalks of the fruits, and to be extremely abundant in the seeds. From the ground seeds it could be extracted easily by maceration with solution of common salt and by treatment with glycerine. So extracted, it was found to be destroyed on boiling, but to be able to withstand moderately prolonged exposure to alcohol. Its activity in a fairly strong extract was quite equal to that of most commercial samples of rennet prepared from the stomach. It could, moreover, be kept with as great security as the latter by the aid of common salt and a little alcohol. Its commercial value is somewhat interfered with by the presence in the seeds, and in their extracts, of a peculiar yellowish-brown colouring-matter, which cannot be separated without destroying the rennet.

Since the publication of Dr. Lea's researches the writer has met with the ferment in the unripe seeds of *Datura Stramonium*, a plant belonging to the same order, Solanaceæ. In this plant, though present in the unripe seeds, it appears to be absent from them when ripe. Its exact distribution is, however, not yet determined.

The occurrence of this property in so many plants, and these not at all closely connected in other ways, leads to the consideration of what must be its physiological significance. It is perhaps not difficult to see why rennet should occur in the stomachs of young animals whose food consists chiefly of milk, but its importance in the vegetable kingdom must be independent of such a function. Further researches, still in progress, may perhaps throw some light upon this point. It is significant so far to notice that its occurrence is mainly in those parts which are especially connected with the reproduction of the plant, a fact which seems to point to a possible function in connection with the storage of proteid food materials for the nutrition of the embryo during germination.

J. R. GREEN.

THE METEORIC SEASON.

WE have now arrived at a period of the year which is full of interest to meteoric observers. The number of meteors visible has greatly increased, as compared with preceding months, and apart from this, observations may be pursued without the discomfort and inconvenience so often experienced on the cold starlight nights of autumn and winter. The impending return of two rich showers is an additional incentive to those who may contemplate giving a little time to this interesting branch of astronomy.

From observations at Bristol on the nights of July 8, 11, and 12 last, it appears certain that the *Perseids* (which attain a maximum on August 10, when the radiant is at 45° + 57°) had already commenced. On July 8 twenty-five meteors were counted between 11h. and 13h. 30m., and these included six paths which denoted a well-defined radiant at the point 3° + 49°, a little south of Cassiopeia's Chair. The visible traits of the individual meteors traced from this radiant were identical with those exhibited by the *Perseids* which are displayed in August, and the fact that this radiant seen on July 8 is far west of the radiant usually remarked on August 10, does not negative the presumed identity of the two showers. The *Perseid* radiant which endures a considerable time, changes its position amongst the stars from night to night, and the extent and direction of this displacement will be seen by a reference to NATURE vol. xxxvi. p. 407, where I have described a number of observations secured at this station in July and August of last year.

When the moon leaves the evening sky towards the close of the present month, observers should watch for the reappearance of the *Aquarids* which are usually seen in marked abundance about July 27, 28, and 29. The radiant is near δ Aquarii, and the meteors are rather slow, usually ascending from low in the south-east, and the brighter ones throw off trains of sparks. Early *Perseids* are also numerous at the end of July, and the radiant is then closely south of the well-known star cluster χ Persei. Observers should register the paths of the meteors and determine the precise place of the radiant on each night of observation.

Bristol, July 13. W. F. DENNING.

NOTES.

THE proposal that a Professorship for the exposition of the Darwinian theory should be established in connection with the Sorbonne has received the sanction of the Sorbonne authorities. Three members of the Committee by which the matter was decided were opposed to the scheme, but they did not vote against it. They simply refrained from voting. The Sorbonne has asked that the name of the proposed chair shall be changed. One or other of the three words, "evolution," "morphology," "phylogeny," is to be substituted for "philosophy."

THE Birmingham meeting of the Photographic Convention of the United Kingdom will be held from the 23rd to the 28th of July. A programme of excursions and local arrangements has been issued. The Convention will be opened on the evening of the 23rd inst., by the Mayor of Birmingham, at a *conversazione* to be held in the Masonic Hall in connection with an exhibition of photographs and photo-apparatus.

ON Thursday, the 12th inst., the anniversary meeting of the Sanitary Institution of Great Britain was held in the theatre of the Royal Institution. The Chairman, Mr. Edwin Chadwick, in opening the proceedings, claimed credit for the Sanitary Institution of Great Britain and like institutions for a large proportion of the reduced death-rate of the metropolis, which was now 14 in 1000. London in that respect compared very favourably with other places, the death-rate in Paris being 27, Vienna 30, and St. Petersburg 40. The medals and certificates awarded to the exhibitors at the Sanitary Exhibition held at Bolton in 1887 having been distributed by Mr. Chadwick, Dr. B. W. Richardson delivered an address on "The Storage of Life as a Sanitary Study." He began by referring to instances of long life in lower animals and in man. These, he said, by some peculiar process as yet but little investigated, held life as a long possession, and to this faculty he applied the term "The Storage of Life." The problem which the lecturer placed before the society was stated as follows:—Certain proofs of the power of the human body to lay or store up life to a prolonged period are admitted. What are the conditions which favour such storage, and how can we promote the conditions which lead to it? He stated the conditions in the following order, hereditary qualification, the virtue of continence, maintenance of balance of bodily functions, perfect temperance, and purity from implanted or acquired diseases. In estimating the value of temperament as connected with life storage, he maintained that the bilious and sanguine temperaments are best for long life, the nervous and lymphatic the worst. In dealing with what he called all-round temperance, he showed that whatever quickened the action of the heart beyond its natural speed and force was a stimulant, and in proportion to the unnatural tax inflicted by stimulation there was a reduction in the storage of life. Dr. Richardson spoke also of the prevention of the damaging diseases, where the art of the sanitarian comes into most effective play. A vote of thanks was accorded to the lecturer.

THE annual meeting of the Liverpool Astronomical Society was held at Liverpool on the 9th inst., when the report of the Council for the past year was read. It appears that since the last annual meeting more than 200 new members have been elected, and that the work carried on by the Society has increased in a commensurate degree. The balance sheet shows a small sum in the hands of the treasurer, so that the financial condition is satisfactory, though there has been a large outlay for printing the Journal. Mr. T. G. E. Elger succeeds Mr. Denning as President, and Mr. Rowlands is appointed Secretary in the place of Mr. W. H. Davies, who has resigned. In commenting upon the withdrawal of Mr. Davies, the Council refer to the earnestness, zeal, and ability displayed by him in performing the arduous duties of his office during a long period, and attribute the rapid development of the Society to his untiring efforts on its behalf.

THE thirty-fifth General Meeting of the German Geological Society will be held at Halle from August 13 to 15.

WE regret to announce the death of M. Jean-Charles Houzeau de Lehaie, Honorary Director of the Royal Observatory of Brussels, member of the Belgian Royal Academy of Sciences. He died at Schaerbeck on the 12th inst. M. Houzeau was in his sixty-eighth year.

THE death is announced of Dr. Johann Odstreil, an eminent mathematician and physicist of Vienna.

A LOWER THAMES VALLEY BRANCH of the Selborne Society has been formed. Its operations will extend on both sides of the river from Hampton to Putney inclusive. The inaugural meeting was held on Monday in the coffee-room of the Star and Garter Hotel, Richmond, the Duke of Cambridge in the chair. The objects of the Selborne Society are to secure the preservation from unnecessary destruction of such wild birds, animals, and plants as are harmless, beautiful, or rare; to discourage the wearing and use for ornaments of birds and their plumages, except when the birds are killed for food or reared for plumage; to protect places and objects of interest or natural beauty from ill-treatment or destruction; and to promote the study of natural history. It is proposed that the new branch of the Society shall devote a part of its funds to the purchase of works on natural history for the free libraries of Richmond, particularly such as throw light upon the natural history of the Thames Valley, and encourage a love of nature in the young.

THE first Annual Report of the National Association for the Promotion of Technical Education has now been issued. It contains a full account of the objects and work of the Association. Its main work up to the present may, according to the Report, be roughly divided as follows:—(1) the publication of leaflets, pamphlets, addresses, and other papers, and the circulation of this literature throughout the country; (2) the holding of public meetings and conferences, and the delivery of lectures and addresses on subjects connected with the work of the Association; (3) Parliamentary work; (4) formation of an agricultural section; (5) commercial education; (6) the organization of branches and local committees to co-operate with the Central Association. Besides the work falling under these heads, the Association has been the means of supplying much information to inquirers on various subjects connected with technical education, and has promoted the movement in other ways. The committee are strongly of opinion that there is a wide field for the future operations of the Association. They urge that branches should be started in all large towns which are now without them, and that every opportunity should be taken by conferences, and in various other ways, to spread sound information on the question of technical education, on which, as the Report truly says, in spite of the great increase in public interest, much lamentable ignorance still remains.

THE Indian Government has adopted an important resolution on the subject of State education. It recommends that wherever possible Government schools should be substituted for private ones, and that the education staff should be strengthened by the engagement of specialists in Great Britain. The resolution deals largely with the question of technical education, and urges that as a beginning an industrial survey should be made of each province.

HAVING been charged with the supervision of a new and complete edition of the "Works of Galileo," to be shortly undertaken at the expense of the Government and under the patronage of the King of Italy, Prof. Antonio Favaro, of the Royal University, Padua, earnestly begs all librarians, curators or trustees of museums, collectors of old manuscripts and autographs, and all those engaged in researches touching the history of science, to give him any information in their power respecting any Galileian documents, which may assist him in carrying out this difficult undertaking.

AT the meeting of the Scientific Committee of the Royal Horticultural Society on July 10, the plague of caterpillars, &c., was one of the subjects discussed. Mr. O'Brien alluded to the abundance of earwigs (Forficula) this season. Mr. Wilson drew attention to the local distribution of the caterpillars. In one garden in his neighbourhood none of the pests were found, while in others there was scarcely a leaf left on the trees. At Wisley Mr. Wilson had found that exposure to east wind was associated with the presence of the insects. Thus the trees in one line of plums, fully exposed, were stripped of their foliage, while in another line of the same variety close by, on the same description of soil, but where the trees were sheltered by a furze fence, not a leaf was injured.

THE Kew Bulletin for July opens with a paper containing much information on Bhabur grass, which closely approaches esparto in habit and in the possession of the technical qualities necessary for paper manufacture. In another paper there is an interesting extract from a letter by Mr. William Fawcett, giving his first impression of the vegetable resources of the Cayman Islands, which are situated in the Caribbean Sea, about 200 miles to the west of Jamaica. In association with the Governor of Jamaica Mr. Fawcett lately visited these lonely and little-known islands for the purpose of investigating a disease which has existed for some time among the cocoa-nut palms at Grand Cayman. Valonia in Cyprus and prickly pear in South Africa form the subjects of two other sections; and the number closes with an account of the true star anise of China, prepared by Sir J. D. Hooker for the current issue of the Botanical Magazine.

THE Annual Report of the Royal Botanic Gardens, Trinidad, for 1887, by Mr. J. H. Hart, Superintendent, has been issued. In an interesting historical sketch Mr. Hart notes that the Trinidad garden has been in existence seventy years, and is the oldest botanical garden which has been continuously maintained in working order within the circuit of the British West Indies. Mr. Hart was appointed Superintendent in 1886, and assumed charge in March, 1887, after eleven years' service in Jamaica. One of his first objects was to make provision for the proper arrangement and storage of herbarium specimens, and he is able to report, thanks chiefly to the interest in the matter taken by the Governor (Sir W. Robinson), that the herbarium is already established on a sound basis. He hopes that when the material is all arranged it will be among the first of West Indian herbariums, if not the very first. "To show the value of such work," says Mr. Hart, "and especially the value attached to the Trinidad flora, I may state that I have already received four applications for sets of the Trinidad plants; as these will bring exchanges from a like number of countries possessing a flora of great value to us for the comparison and identification of our own, these offers will be taken up as early as possible. Prof. W. Thiselton Dyer, Director of Kew, in a letter recently received, says: 'In Trinidad itself there must be an enormous amount of work still to be done.' Trinidad stands unique among the other islands by the possession of a flora which combines the West Indian with the South American, and has besides many plants which are only known to occur within its own boundaries, or, in other words, are pecular to the island itself."

ACCORDING to intelligence received at New York on July 14, Honduras had been visited by severe storms and earthquake shocks, which had caused great damage to property, but no loss of life.

THE fourth yearly report of the Berlin branch of the German Meteorological Society for the year 1887, shows that the number of members has increased from thirty-seven in January, 1884, the time of its foundation, to 117. The President for the year 1888 is Dr. Vettin. The proceedings of the monthly meetings have been reported in our Notices of Societies, &c. The present report contains an account of the special rainfall investigations at twenty stations in and near Berlin, and comparisons of the different rain gauges employed.

THE British Consul at Bussorah on the Persian Gulf in his last report states that a remarkable improvement has taken place in the climate of the country round Bussorah with the substitution of date and wheat cultivation for that of rice. The malarious fever, to which Bussorah gave its name, is now comparatively rare; and sallow complexions and worn looks, which some years ago were universal, are now no longer seen. The north-west wind, which prevails in the hot weather, instead of being moist and clammy, as it used to be, is dry and hot. The month of September, when the marsh which is formed yearly by the overflow of the Euphrates is drying up, is still the least healthy season. December and January are cold, July and August intensely hot. The rest of the year is very much like the spring and summer of Southern Europe.

THE administration report of the Meteorological Reporter for the North-West Provinces and Oudh for the year 1887-88, states that there are now nineteen first-class observatories and 275 rainfall stations reporting regularly to the central office. Records of rainfall and temperature are kept at numerous dispensaries all over the Jeypore territory. At the majority of the stations the old float gauge is still used, but gauges of this kind are gradually being replaced by Symons's 5-inch gauge, with improved results. Mr. Hill has under discussion a valuable series of temperature and humidity observations made at various heights above the ground. Amongst the interesting results published we may specially mention the sunshine observations at Allahabad. No less than 89 per cent. of the possible amount was recorded in November, 1887; the lowest percentage was 34·5 in August, and the mean for the year was 67·9 per cent.

THE composition of persulphide of hydrogen has at last been satisfactorily determined by Dr. Rebs of Jena. The history of this substance has been a most remarkable one; it has by turns been awarded almost every conceivable formula from H_2S_2 to H_2S_{10}. The results of Dr. Rebs' researches, however, go to show that it possesses the formula H_2S_5, first assigned to it many years ago by Berthollet, and that it is a true pentasulphide of hydrogen. It was prepared pure by the following method: A solution of soda in alcohol was saturated with sulphuretted hydrogen gas, and an equal bulk of alcoholic soda afterwards added to the sodium sulphydrate thus formed. After agitation the fluid solidified to a white crystalline mass of sodium sulphide, to which flowers of sulphur were added in the proportion necessary to form the required polysulphide of soda. The di- and tri-sulphides prepared in this manner crystallized out, but the tetra- and penta-sulphides remained in solution. They were then freed from alcohol in a current of hydrogen, and the residue dissolved in water out of which all the air had been expelled. In order to obtain persulphide of hydrogen, the solutions were poured into cylinders containing concentrated hydrochloric acid kept cool by ice. Sulphuretted hydrogen gas was immediately evolved, and an emulsion formed, which on standing became clear, and small oily drops of persulphide of hydrogen settled out and united to form an oil. After decantation of the supernatant liquor and washing with ice-cold water, the oil was eventually dried and analysed. The analyses show most conclusively that all the four polysulphides of soda, when their aqueous solutions are poured into hydrochloric acid, yield one and the same polysulphide of hydrogen, viz. the pentasulphide H_2S_5. To complete the proof the four polysulphides of potassium were similarly treated, with like result; more interesting still, Dr. Rebs shows that the sulphides of barium behave in a precisely analogous manner, forming nothing but H_2S_5. When the pentasulphides are employed there is a simple exchange of metal for hydrogen, but with the lower persulphides a decomposition of the corresponding sulphide of hydrogen first formed occurs into pentasulphide and sulphuretted hydrogen. Pentasulphide of hydrogen is a bright yellow, mobile, transparent oil, possessing an odour peculiar to itself. When dry it may be preserved in a closed tube without decomposition, but in contact with water it breaks up rapidly, with evolution of sulphuretted hydrogen and separation of sulphur.

THE tobacco-plants in the Russian Government of Bessarabia have of late years suffered greatly from disease, which has almost threatened ruin to the industry of tobacco growing. Prof. Lindemann, having been asked as a specialist to study the subject, has found three kinds of disease, the most important of which by far is a kind of consumption to which the plant is subject, caused chiefly by larvæ of the beetle *Opatrum intermedium*, Fisch. This grub attacks the underground part of the stem and the leaves. The female lays her eggs from the middle of April to that of May, and in loose ground not yet covered by the plants. The larva lives two and a half months, and the pupa stage is fourteen days. The insect does not breed till the following spring. The larva feeds at first mostly on wild plants, *Atriplex* and *Convolvulus*, but never on *Leguminosæ*. It attacks Gramineæ (maize, wheat, &c.), but only the embryo of the grain, and when germination has begun the grain is avoided. Though the time of possible attack is thus short, maize culture in Bessarabia has suffered much in this way. To protect the tobacco, Prof. Lindemann recommends sowing the fields in the end of March with mustard or rape, so that the insect at the time of egg-laying may be hindered by a thick cover of vegetation. Another insect (*Pedinus femoralis*, F.) acts just like Opatrum, but does more harm to maize than to tobacco. Prof. Lindemann further describes two minor diseases affecting the leaves, and making the tobacco unsalable. One (*thrips*) is also caused by an insect; the other (*mosaic disease*) seems to be due to some condition of the ground.

THE Indian Museum has begun to issue what promises to be a most useful series of "Notes on Economic Entomology." Two numbers, by Mr. E. C. Cotes, first assistant to the Superintendent of the Indian Museum, have been published—the first presenting a preliminary account of the wheat and rice weevil in India; the second dealing with the experimental introduction of insecticides into India, and including a short description of modern insecticides and methods of applying them.

THE new number of the "Internationales Archiv für Ethnographie" (Band I., Heft III.) contains, besides various collections of short notes, the conclusion of Herr J. Büttikofer's excellent paper on the natives of Liberia, and an account, by Herr A. Woldt, of objects of interest brought by Captain Jacobsen from certain districts of the Amoor in 1884-85, and now preserved among the treasures of the Berlin Ethnographical Museum. These objects are valuable on account of the light they throw on customs connected with Shamanism.

AN instructive paper on the osteology of Porzana Carolina (the Carolina Rail), by Dr. R. W. Schufeldt, has been republished from the *Journal of Comparative Medicine and Surgery*. As defined by the American Ornithologists' Union, the order Paludicolæ, containing the Cranes, Rails, &c., is primarily divided into two sub-orders, the (1) Grues or the true Cranes, and (2) the Ralli, containing the Rails, Coots, and Gallinules, &c. The family *Rallidæ* occur in this latter group, wherein the genus *Porzana* is well represented by the subject of Dr. Schufeldt's memoir—the common Sora or Carolina Rail. A complete account of the osteology of this ralline form has never been published, yet its skeleton contains many points of interest, to say nothing of importance when it is compared with other types. When his material better admits of it, Dr. Schufeldt proposes to thoroughly compare the anatomy of the several forms of American Cranes and Rails.

THE Cavendish Lecture, delivered at the West London Hospital by Sir William Stokes, has just been published. The subject is "The Altered Relations of Surgery to Medicine."

ACCORDING to the report of the Medical Missionary Society's Hospital in Canton for 1887, the medical class numbered twelve Chinese, of whom four were women. The students are required to pay a fee, which is fixed at twenty dollars a year for three years, over which period the course extends. They support themselves and buy their own books. Western medicine and surgery are slowly but surely advancing in China, and it is now time that schools of a high order were established. The publication of many medical books, the establishing of hospitals, in which millions of patients have been treated, the training of hundreds of students, the skill of the European physicians practising in the open ports—all tend to educate China and prepare the way for greater things.

THE Russian Statistical Committee having made minute inquiry as to the number of blind people in Russia, it appears that blindness is very unequally distributed among the different nationalities inhabiting the Empire. While there are only 8 blind people for each 10,000 Poles, 10 for as many Lithuanians and Jews, and 19 for Russians and Letts, the figures rise to 22 with the Esthonians, 35 with the Bashkirs, 41 with the Mordovians, 51 with the Tartars and Tcheremisses, 63 with the Tchuvashes, and 83 with the Votyaks. Blindness is thus much more widely spread among the Ural-Altayans, and especially among the Finnish-Mongolian stems, than among the Aryans and Semites, although the conditions of all these races, so far as poverty is concerned, are much the same. It is worthy of note that one-eighth of all cases of blindness in Russia are due to small-pox, and one-half only to direct eye diseases.

A JOINT exhibition will be made at the "Cincinnati Centennial" by the National Museum, the Smithsonian Institution, the U.S. Geological Survey, and the Bureau of Ethnology. The law providing the necessary funds was not approved until May 28, so that there has been little time for preparation; but "the Government scientific exhibits," says *Science*, "will be in Cincinnati in good season, and will constitute one of the most interesting features of the exposition." In the Department of Anthropology the National Museum will exhibit cases of objects showing the geographical distribution and physical characteristics of the races of men, and the processes and results of some of the most primitive arts. It will also exhibit a collection illustrating Biblical archæology, and a collection of remains of prehistoric man in Europe, Asia, and America. In connection with the same department the Bureau of Ethnology will have a good exhibition. It has chosen as its special subject the Pueblo of Zuñi, its arts and industries; and it will show various models of Indian mounds of the Mississippi.

THE additions to the Zoological Society's Gardens during the past week include a Mona Monkey (*Cercopithecus mona* ♂) from West Africa, presented by Miss Edith Frank; a Macaque Monkey (*Macacus cynomolgus* ♂) from India, presented by Miss Chester; a Brown Capuchin (*Cebus fatuellus* ♂) from Guiana, presented by Mr. Roger M. Dodington; a —— Capuchin (*Cebus* ——) from Columbia, presented by Mr. H. B. Whitmarsh; a Grand Eclectus (*Eclectus roratus*) from Moluccas, a Red-sided Eclectus (*Eclectus pectoralis*) from New Guinea, presented by Lt.-Col. R. Wolfe; two Corn Crakes (*Crex pratensis*) British, presented by Mr. R. B. Spalding; a Green Turtle (*Chelone viridis*) from the West Indies, presented by Baron Henry de Worms; two Hog-nosed Snakes (*Heterodon platyrhinos*), a —— Snake (*Cyclophis æstiva*), two Carolina Anolises (*Anolis carolinensis*) from North America, presented by Mr. H. E. T. Glover; two European Tree Frogs (*Hyla arborea*) European, presented by Mr. Lionel A. Williams; a Tuberculated Iguana (*Iguana tuberculata*), two Common Boas (*Boa constrictor var. diviniloqua*), a —— Snake (*Dromicus ater*) from the West Indies, presented by the West Indian Natural History Exploration Committee; two Ruffed Lemurs (*Lemur varius*) from Madagascar, a Hyacinthine Macaw (*Ara hyacinthina*) from Northern Brazil, three Red and Blue Macaws (*Ara macao*) from Central America, four Spotted Tinamous (*Nothura maculosa*) from Buenos Ayres, deposited; two King Crabs (*Limulus polyphemus*) from North America, purchased; two Mule Deer (*Cariacus macrotis*) born in the Gardens.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 *JULY* 22–28.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on July 22

Sun rises, 4h. 12m.; souths, 12h. 6m. 11·8s.; sets, 20h. 0m.: right asc. on meridian, 8h. 8·9m.; decl. 20° 9′ N. Sidereal Time at Sunset, 16h. 4m.

Moon (Full on July 23, 6h.) rises, 19h. 39m.; souths, 23h. 53m.; sets, 4h. 10m.*: right asc. on meridian, 19h. 57·3m.; decl. 20° 25′ S.